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10/811,728

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CU-3663 RJS

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EXAMINER

CHANG, CHING

ART UNIT

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Please find below and/or attached an Office communication concerning this application or proceeding.



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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

Application Number: 10/811,728  
Filing Date: March 29, 2004  
Appellant(s): TAKAMURA, HIROYUKI

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Brian W. Hameder  
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 01/31/2006 appealing from the Office

Action mailed on 01/23/2006.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

Sada (US Patent 5,997,988).

Nishioka et al. (US Patent 6,367,439).

**(9) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim 1 is rejected under 35 U.S.C. 103(a) as being unpatentable over Sada (US Patent 5,997,988) in view of Nishioka et al. (US Patent 6,367,439).***

Sada discloses a valve train (See Fig. 3) for an internal combustion engine comprising a cam lobe (4, 7) fixed on a cam shaft (5) and a roller follower (1) provided with a roller (11) to come in rotation-contact with the cam lobe, and the surface roughness of the outer circumferential surface of the aforementioned contact elements has been identified in the test as either 1.4 (embodiment 1 of Table 1) or 1.1  $\mu\text{m}$  (embodiment 2 of Table 1), within the range of 0.4 to 2.2  $\mu\text{m}$ .

Furthermore, the Sada reference also teaches " the present invention is applicable to all machine parts each having a contact surface which enters a state of at least one of rolling contact and sliding contact with the other part opposite thereto " (See Col. 5, line 36-39), accordingly, the test data of the outer circumferential surface roughness  $R_y$  in Table 1 of Sada reference, would be applied to both cam lobe and roller, which means the surface roughness  $R_a$  of the outer circumferential surface of both the cam lobe and the roller, could be either 1.4 or 1.1  $\mu\text{m}$  (within the range of 0.4 to 2.2  $\mu\text{m}$ ), in a contact operation between them.

Sada discloses the invention as recited above, however, fails to disclose the cam lobe being made of an iron based sintered material.

The patent to Nishioka on the other hand, teaches that it is conventional in the cam art, to utilize a cam (1) made of an iron based sintered material (See Col. 4, line 46 through line 67) for an engine valve train.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have utilized the cam made of an iron based sintered material as taught by Nishioka in the Sada device, since the use thereof would provide an improved engine train with a durable cam rotating contact surface.

**(10) Response to Argument**

Appellant's arguments filed on 01/31/2006 have been fully considered but they are not persuasive.

Regarding the Appellant's contention " the Applicant contends that Sada does not disclose or suggest both machine parts (cam lobe and roller follower) contact surface having a surface roughness Ra of 0.4 to 2.0  $\mu\text{m}$ , as claimed. "(See The Second Paragraph, Page 3 of Appellant's Argument), and " Table 1 of Sada,....Table 1 does not, however, disclose both machine parts having contact surfaces with these maximum surface roughness, or within the claimed Ra surface roughness range of 0.4 to 2.2  $\mu\text{m}$ , as explained in Column 6, line 57 through Column 7, line 11. " (See The Third Paragraph, Page 3 of Appellant's Argument), the Examiner disagrees. As a matter of fact, the Sada reference does disclose the rolling contact surface of a test cylinder 50 (See Fig. 4), which has the maximum circumferential surface roughness ( $R_y$ ) 1.4  $\mu\text{m}$  in embodiment 1, and 1.1  $\mu\text{m}$  in embodiment 2 (under Column C, as shown in Table 1), both are within the range of 0.4 to 2.2  $\mu\text{m}$ , for the claimed surface roughness Ra of the outer circumferential surface of a rotation-contact element in claim 1 of this instant application, in addition, the Sada reference further discloses a simulated durability test for a rolling contact between a drive wheel 60 and the test cylinder 50, " the test cylinder

50 corresponding to an outer ring and the drive wheel 60 corresponding to a cam was carried out. " (See Col. 6, line 64 through line 67); and " both the rolling contact surfaces of the test cylinder and the drive wheel were not damaged, whereby the effect of the present invention was verified. " (See Col. 7, line 17 through line 19), furthermore, the Sada reference teaches " the present invention is applicable to all machine parts each having a contact surface which enters a state of at least one of rolling contact and sliding contact with the other part opposite thereto " (See Col. 5, line 36-39), and further confirmed by Appellant's Remarks " Sada further describes that invention as being applicable to both rolling contact and sliding contact. " (See The Third Paragraph, Page 4 of Appellant's Argument), accordingly, the Examiner would deem that the results of the aforementioned test in Sada reference would ensure the proper surface roughness shown in Table 1, to be applied to both the rolling contact elements of the roller (1) and the cam (4), as shown in Fig. 3 of the Sada reference. Additionally, it appears that Ry would not be differentiated from Ra, both direct to the same outer circumference surface roughness, accordingly, the Examiner would further deem that the surface roughness Ra of the outer circumferential surface of both the roller and the cam lobe would be either 1.1 or 1.4  $\mu\text{m}$  as taught in Sada reference, within the range of 0.4 to 2.2  $\mu\text{m}$ , as claimed in this instant application.

Furthermore, in response to Appellant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning (i.e., " The Examiner has gone beyond the disclosure of the reference and has used improper hindsight, in the assertion that it would have been obvious to provide both machine parts with the

claimed surface roughness. " (See The Third Paragraph, Page 3 of Appellant's Argument)), it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to the Appellant's argument - " In support of the Applicant's assertion of the well known definition of Ra, Applicant previously submitted an English translation of Japanese Industrial Standard B 0601 which defines Ra as the arithmetic mean roughness. As shown in Figure 9 of JIS B 0601, Ra is the average of a series of consecutive peak to valley vertical distances over a sample length of a surface. " (See The Second Paragraph, Page 4 of Appellant's Argument), the Examiner disagrees. As a matter of fact, " arithmetical mean roughness " has not been disclosed, only " the surface roughness Ra of the outer circumferential surface " has been disclosed in the Specification of this instant application (See Pages 8-10, 12-13, etc.), accordingly, the Attorney's assertion of " This value of Ra necessarily would be less than Ry which is defined in Sada as the vertical distance between the greatest peak height and the greatest valley height over a sample length of a surface, as shown in Figure 1 of Sada. Thus, Sada does not disclose the claimed Ra surface roughness values. " (See The Second Paragraph, Page 4 of Appellant's Argument) " would not be able to be ascertained.

Furthermore, in response to Appellant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., " In contrast, the function of the present invention is to provide only rolling contact between two machine parts without the formation of an oil film. " (See The Third Paragraph, Page 4 of Appellant's Argument)) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Additionally, in response to the Appellant's argument " The Applicant further considers that even if Ra of the present application were equal to Ry of Sada, that Sada teaches away from using the claimed surface roughness, notwithstanding the fact that Sada teaches Ry equals 3  $\mu\text{m}$  on the second machine part contact surface. "(See The Fourth Paragraph, Page 4 of Appellant's Argument). The Examiner disagrees. As a matter of fact, such a data of Ry equals 3  $\mu\text{m}$  has not been applied and would not be necessarily to be used in the Office Action in the record. In addition, it would be further confirmed that the applicant admits the surface roughness data disclosed in Table 1 of Sada reference, to be applicable to both the claimed cam lobe and the roller of this instant application.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Patent Examiner, Art unit 3748



Ching Chang

Conferees:



Thomas Denion



Henry C Yuen